

# **Applied A.I. Solutions**

## **Data Visualization Techniques**

**Professor**  
**Daniel Vitaver, B.Sc., EMBA**

[daniel.vitaver@georgebrown.ca](mailto:daniel.vitaver@georgebrown.ca)

# **DATA VISUALIZATION TECHNIQUES**

## **Business Analytics**

## Business Analytics

- Business Analytics help organizations uncover hidden patterns and trends and see the story that lives within their data to get relevant insights for planning, forecasting, informed decision-making and performance management.

## Types of Analytics – Questions to answer

- what happened and why is this happening?
- how many and how often and what if these trends continue?
- where the problem is and what actions are needed?
- what will happen next? (predict)
- what is the best that can happen? (optimize, simulate)

**Storytelling**

## Descriptive Analytics

- It is the examination of data or content, usually manually performed, to answer the question “What happened?” or “What is happening?”
- It is characterized by traditional BI and visualizations such as pie charts, bar charts, line graphs, tables, reporting, scorecards, clustering or generated narratives.

## Diagnostic Analytics

- It examines data or content to answer the question  
“Why did it happen?”
- It is characterized by techniques such as drill-down, data discovery, data mining and correlations

## Predictive Analytics

- It use statistical and machine learning techniques to answer the question “What is likely to happen?”.
- Predictive models exploit trends and patterns found in historical and transactional data to identify risks and opportunities and determine a **predictive score** (probability) for each associated entity

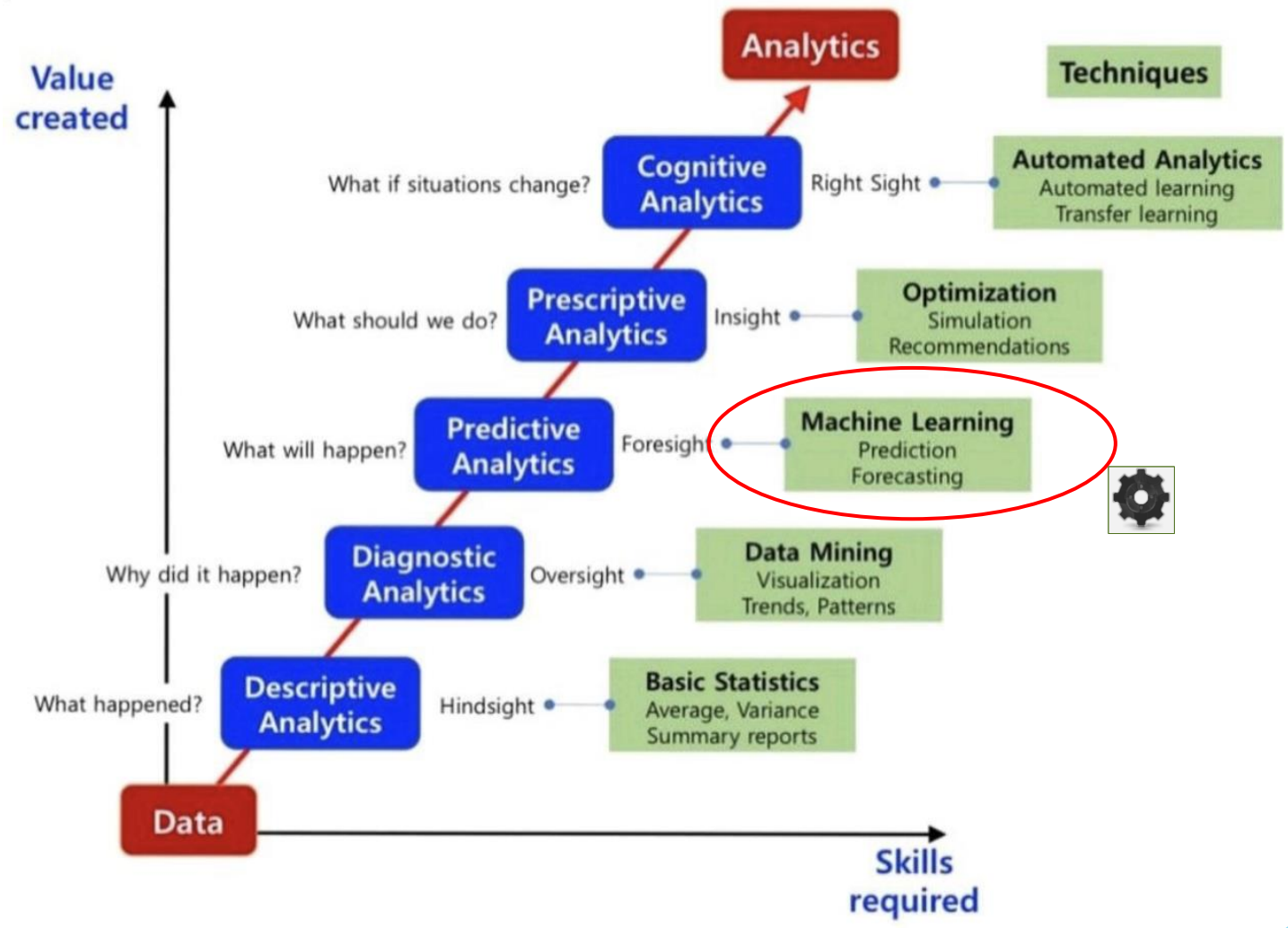
## Prescriptive Analytics

- It examines data or content to answer the question “What should be done?” or “What can we do to make it happen?”
- It is characterized by techniques such as graph analysis, simulation, optimization, complex event processing, neural networks, heuristics, and machine learning.

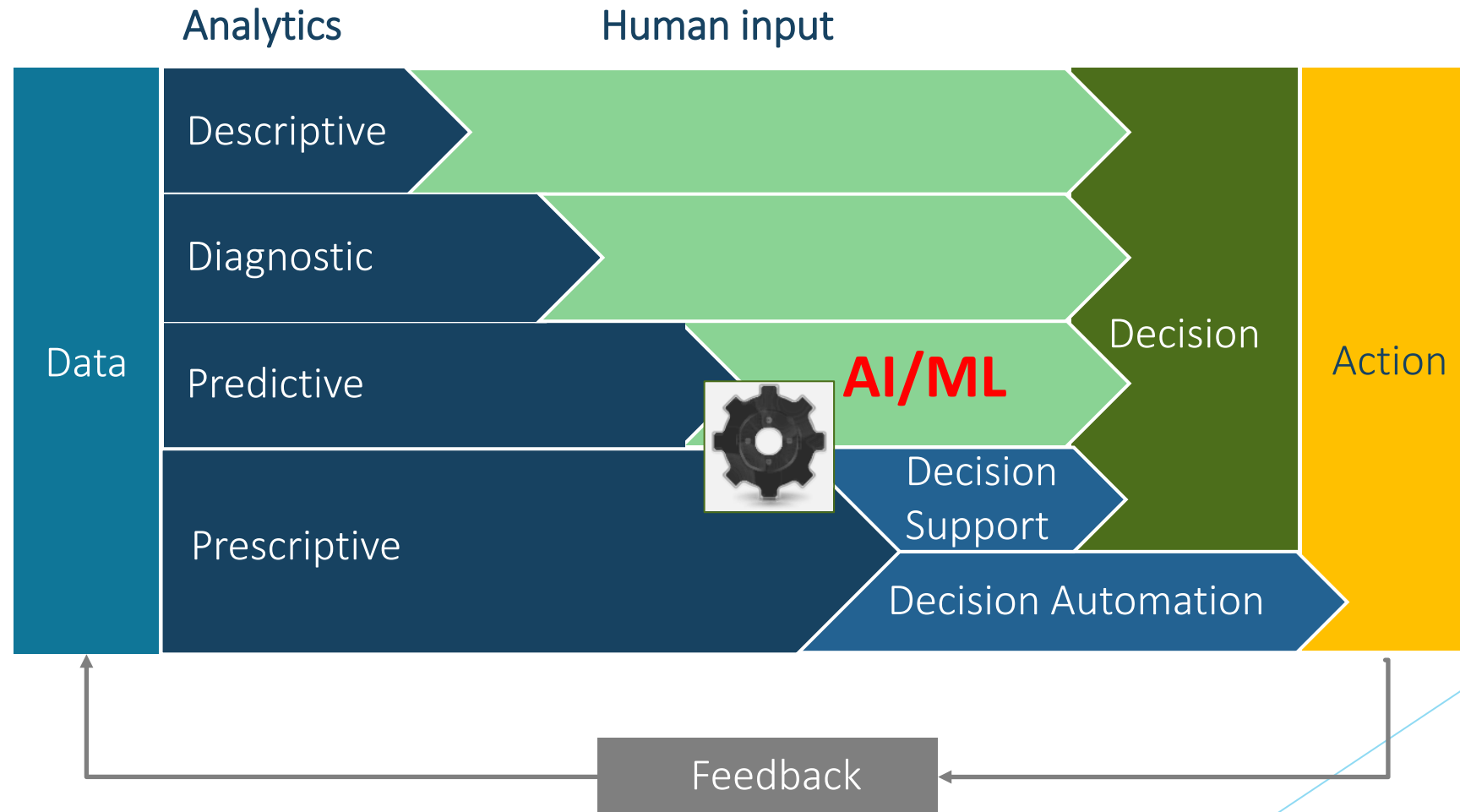


## Cognitive Analytics

- It examines data or content to answer the question “What if situation changes?”
- It is characterized by techniques such as automated analytics, automated learning and transfer learning



## Analytics – Human input vs Process automation



Source: Gartner

